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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,424	04/20/2004	Yuu Inatomi	43888-314	2569

7590 03/28/2007  
MCDERMOTT, WILL & EMERY  
600 13th Street, N.W.  
WASHINGTON, DC 20005-3096

EXAMINER
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CHU, HELEN OK

ART UNIT	PAPER NUMBER
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1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/28/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/827,424	INATOMI ET AL.	
	Examiner	Art Unit	
	Helen O. Chu	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 2/13/2007, 10/18/2006.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 22,25,28,32,35,38,41,44,47,50 and 53 is/are pending in the application.
- 4a) Of the above claim(s) 20,23,24,26,27,29-31,33,34,36,37,39,40,42,43,45,46,48,49,51,52,5,55,57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22,25,28,32,35,38,41,44,47,50 and 53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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### **DETAILED ACTION**

1. Applicant's Amendments were received on October 18, 2006. Claims 19, 21, 56 and 58 are cancelled. Claims 20, 23, 26, 29, 31, 33, 36, 39, 42, 45, 48, 51, 54, 57 are withdrawn. Claims 22, 24, 28, 27, 28, 30, 32, 34, 35, 37, 38, 40, 41, 43, 44, 46, 47, 49, 50, 52, 53, 55 are amended.
2. Applicant's Response to Election/Restriction was received on February 13, 2007.
3. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action.

### ***Continued Examination Under 37 CFR 1.114***

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 18, 2006 has been entered.

### ***Election/Restrictions***

5. Applicant's election of Group I drawn to claims 22,25,28,32,35,38,41,44,47,50,53 in the reply filed on 2/13/2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

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6. Applicant's species election with traverse on claims 32 in respect to  $X = S$  and  $X = O$  is acknowledged. The traversal is on the ground(s) that "both O and S belong to family 16 of the periodic table and need no range and also is not excessive in scope. This is not found persuasive because if S and O are substituted for each other, in some compounds, they would have different properties. For example in  $H_2O$ , one skilled in the art would not substitute S in place of O and state that  $H_2O$  and  $H_2S$  would have the same properties because they are in the same family of the periodic table and therefore  $H_2S$  is drinkable

The requirement is still deemed proper and is therefore made FINAL.

7. Applicant's species election with traverse on claims 28, 30, 32 and 34 in respect to  $R_1$  to  $R_6$  and aliphatic carbons and specific carbon atoms is acknowledged. The traversal is on the ground(s) that it is not excessive in scope. This is found persuasive and the Examiner will prosecute these species.

8. Applicant's election of claim 44 drawn to the species for a specific negative active material to be a lithium-containing composite titanium oxide is acknowledged. The traversal is on the ground(s) that it is not excessive in scope. This is found persuasive and the Examiner will prosecute these species.

***Claim Rejections - 35 USC § 102***

9. The rejections under 35 U.S.C 102(b), as anticipated by Fujishita et al. on claims 19, 21, 22, 24, 25, 27, 28 and 30 are withdrawn because Applicant has withdrawn, cancelled and amended the claims.

***Claim Rejections - 35 USC § 103***

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10. The rejections under 35 U.S.C 102(b), unpatentable by Fujishita et al. in view of Zhang et al., on claims 32, 34, 35, 37, 38, 40, 41, 43, 44, 46, 47, 49, 50, 52, 53, 55, 56, 58 are withdrawn because Applicant has withdrawn, cancelled and amended the claims.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

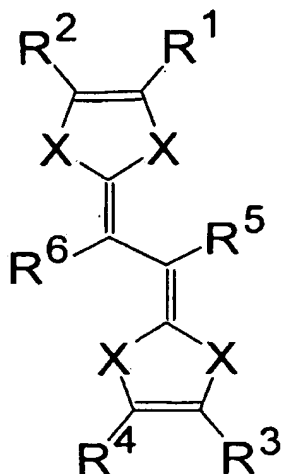
12. Claims 22, 25, 28, 32, 35, 38, 41, 44, 47, 50, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US Patent 6,110,619) and in view of Carlier et al. (Publication Electrochimica Acta)

13. The Zhang et al. reference teaches a secondary battery (Column 1, Line 37) comprising a positive electrode, a negative electrode and an electrolyte where the positive electrode has an organo-sulfur structure (Column 2, Line 52). The negative electrode active material includes a carbon material and a lithium metal (Column 6, Lines 5-7). The positive electrode active material includes a metal oxide (Column 5, Line 63-64) and is mixed with a conductive material (Column 5, Lines 54-56). The Zhang reference further discloses the electrolyte comprises a solvent where the anion and lithium cation diffuse in and the compound is capable of forming a coordinate bond with the lithium cation by oxidation-reduction reaction (Column 8, Lines 6-22). Some examples of electronically conductive polymers used in sulfur containing solid composite

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electrodes included polyacetylenes. However, the Zhang et al. reference does not disclose a structure represented by formula (1a). the Carlier et al. reference discloses a structure represented by the following formula:

(1a)



Where X = S, R<sub>1</sub> to R<sub>4</sub> are methyl or substituted methyl groups. R<sub>5</sub> and R<sub>6</sub> are hydrogen atoms. Furthermore, Carlier et al. discloses the compound induces fast electron transfer and can control relative stabilities of the different redox species (Conclusion; Pages 3269-3276). Therefore it would have been obvious to one of ordinary skill to use thiafulvalenes as disclosed by Carlier et al. into the secondary battery with organic sulfur electrodes as disclosed by Zhang et al. to increase the electroconductivity. Finally it is known in the art that in a secondary battery the positive and negative electrodes can function interchangeable depending on whether the battery is charging or discharging and therefore the

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same compounds used for a positive electrode can be used for a negative electrodes.

It is noted that claims 50 and 53 are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since product is similar to that of the Applicant's, Applicant's process is not given patentable weight in this claim.

### ***Response to Arguments***

14. Applicant's arguments with respect to claims 19, 21, 22, 24, 25, 27, 28, 30, 32, 34, 35, 37, 38, 40, 41, 43, 44, 46, 47, 49, 50, 52, 53, 55, 56, and 58 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen O. Chu whose telephone number is (571) 272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOC

  
TRACY DOVE  
PRIMARY EXAMINER  
3/07